IN THE UNITED STATES PATENT AND TRADEMARK OFFICE
Attorney Docket Number 135488CT (15163US01)

In the Application of:	
Saad Ahmed Sirohey, et. al.	Examiner: Bernard Krasnic
Serial No. 10/756,872	
Filed: January 12, 2004	Group Art Unit: 2624
Title: System and Method For Overlaying Color Cues on A Virtual Representation Of An Anatomical Structure	**Electronically Filed on August 28, 2008**

APPEAL BRIEF

Mail Stop Appeal Brief – Patents
Commissioner for Patents
P.O. Box 1450
Alexandria, VA 22313-1450

Sir:

The Applicants respectfully request that the Board of Patent Appeals and Interferences reverse the final rejection of claims 1-31 of the present application. The Appeal Brief is timely because it is being filed within two months of the Notice of Appeal filed on July 14, 2008.

REAL PARTY IN INTEREST
(37 C.F.R. § 41.37(c)(1)(i))

The real party in interest is GE Medical Systems Global Technology Co., LLC, having a place of business at 3000 North Grandview Boulevard, Waukesha, Wisconsin 53188.

RELATED APPEALS AND INTERFERENCES
(37 C.F.R. § 41.37(c)(1)(ii))

Not applicable.

STATUS OF THE CLAIMS
(37 C.F.R. § 41.37(c)(1)(iii))

The present application includes claims 1-31, all of which stand rejected.[1] The Applicants identify claims 1-31 as the claims that are being appealed. The text of the claims involved in this Appeal, namely, claims 1-31, is provided in the Claims Appendix.

STATUS OF AMENDMENTS
(37 C.F.R. § 41.37(c)(1)(iv))

Subsequent to the final rejection of claims 1-31 mailed April 15, 2008, the Applicants filed a Response.[2] However, this Response did not amend any of the pending claims.[3]

[1] *See* April 15, 2008 Final Office Action and May 23, 2008 Advisory Action.
[2] *See* April 30, 2008 Response Under 37 C.F.R. § 1.116.
[3] *See id.*

SUMMARY OF CLAIMED SUBJECT MATTER
(37 C.F.R. § 41.37(c)(1)(v))

Independent claim 1 recites the following:

A method for displaying a set of data with a virtually dissected anatomical structure,[4] said method comprising:

creating a virtual dissection[5] of the anatomical structure by mapping a first set of data[6] of the anatomical structure to a second set of data[7] of the anatomical structure;[8]

computing a plurality of display index values corresponding to object shapes[9] in said first set of data;[10]

assigning display attributes to said display index values;[11]

distance mapping from a reference axis said display index values from the first set of data to a third set[12] of data;[13] and

organizing said third set of data for display with the virtually dissected anatomical structure.[14]

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[4] *See* present application, *e.g.*, at page 5, lines 2-3.
[5] *See id., e.g.*, at page 11, line 20 to page 12, line 6, page 17, lines 4-6 and Figure 3, ref. 300.
[6] *See id, e.g.*, at page 9, lines 4-7 and Figure 1, ref. 103.
[7] *See id., e.g.*, at page 9, lines 4-7 and Figure 1, ref. 107.
[8] *See id., e.g.*, at page 5, lines 3-6 page 9, lines 16-17 and page 11, line 4 to page 12, line 6.
[9] *See id., e.g.*, at page 13, lines 12-21.
[10] *See id., e.g.*, at page 5, lines 7-8.
[11] *See id., e.g.*, at page 5, line 8 and page 13, line 22 to page 14, line 9.
[12] *See id., e.g.*, at page 9, lines 4-7 and Figure 1, ref. 109.
[13] *See id., e.g.*, at page 5, lines 8-9 page 9, line 23 to page 10, line 2 and page 14, lines 10-21.

Dependent claim 4 recites the following:

The method of claim 1, further comprising highlighting select said display index values according to user input.[15]

Dependent claim 6 recites the following:

The method of claim 4, wherein said highlighted select said display index values are fluid data.[16]

Dependent claim 7 recites the following:

The method of claim 4, wherein said highlighted select said display index values are contrast enhanced fecal matter data.[17]

Independent claim 9 recites the following:

A system for displaying a set of data with a virtually dissected anatomical structure,[18] said system comprising:

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[14] *See id., e.g.,* at page 5, lines 9-12, page 10, lines 3-7 and page 14, line 22 to page 15, line 10.
[15] *See id., e.g.,* at page 6, lines 2-18 and page 15, lines 11-16.
[16] *See id., e.g.,* at page 6, lines 2-4 and 14, page 13, line 22 to page 14, line 9 and page 15, line 11 to page 16, line 17.
[17] *See id., e.g.,* at page 6, lines 2-4 and 15-16, page 13, lines 14-17, page 15, line 11 to page 16, line 17.
[18] *See id., e.g.,* at page 5, lines 2-3.

a virtual dissection unit[19] for creating a virtual dissection[20] of the anatomical structure[21] by mapping a first set[22] of data to a second set[23] of data,[24] wherein the second set of data corresponds to the virtual dissection;[25]

a computation unit[26] for computing display index values corresponding to object shapes[27] in said first set of data;[28]

an assignment unit[29] for assigning display attributes to said display index values;[30]

a mapping unit[31] for distance mapping from a reference axis said display index values from the first set of data to a third set[32] of data;[33]

an overlay unit[34] for organizing said third set of data for display with the virtually dissected anatomical structure.[35]

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[19] *See id., e.g.,* at page 9, lines 7-8 and Figure 1, ref. 110.
[20] *See id., e.g.,* at page 11, line 20 to page 12, line 6, page 17, lines 4-6 and Figure 3, ref. 300.
[21] *See id., e.g.,* at page 5, lines 14-15.
[22] *See id, e.g.,* at page 9, lines 4-7 and Figure 1, ref. 103.
[23] *See id., e.g.,* at page 9, lines 4-7 and Figure 1, ref. 107.
[24] *See id., e.g.,* at page 5, lines 15-16, page 9, lines 16-17 and page 11, line 4 to page 12, line 6.
[25] *See id., e.g.,* at page 11, lines 10-19.
[26] *See id., e.g.,* at page 5, lines 7-8 and Figure 1, ref. 120.
[27] *See id., e.g.,* at page 13, lines 12-21.
[28] *See id., e.g.,* at page 5, lines 16-17.
[29] *See id., e.g.,* at page 5, lines 8-11 and Figure 1, ref. 130.
[30] *See id., e.g.,* at page 5, lines 17-18 and page 13, line 22 to page 14, line 9.
[31] *See id., e.g.,* at page 9, lines 8-11 and Figure 1, ref. 140.
[32] *See id., e.g.,* at page 9, lines 4-7 and Figure 1, ref. 109.
[33] *See id., e.g.,* at page 5, lines 19-20, page 9, line 23 to page 10, line 2 and page 14, lines 10-21.
[34] *See id., e.g.,* at page 9, lines 8-11 and Figure 1, ref. 150.
[35] *See id., e.g.,* at page 5, lines 20-22 page 10, lines 3-7 and page 14, line 22 to page 15, line 10.

Dependent claim 12 recites the following:

The system of claim 9, further comprising a highlighting unit for highlighting select said display index values according to user input.[36]

Dependent claim 14 recites the following:

The system of claim 12, wherein said highlighted select display index values are fluid data.[37]

Dependent claim 15 recites the following:

The system of claim 12, wherein said highlighted select display index values are contrast enhanced fecal matter data.[38]

Independent claim 17 recites the following:

A method for viewing a virtually dissected anatomical structure,[39] said method comprising:

instructing by a user the display of a virtual dissection[40] of an anatomical structure;[41]

selecting by a user various characteristics of the anatomical structure for enhancement;[42] and,

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[36] *See id., e.g.,* at page 6, lines 2-18 and page 15, lines 11-16.
[37] *See id., e.g.,* at page 6, lines 2-4 and 14, page 13, line 22 to page 14, line 9 and page 15, line 11 to page 16, line 17.
[38] *See id., e.g.,* at page 6, lines 2-4 and 15-16, page 13, lines 14-17, page 15, line 11 to page 16, line 17.
[39] *See id., e.g.,* at page 6, lines 7-9.
[40] *See id., e.g.,* at page 11, line 20 to page 12, line 6, page 17, lines 4-6 and Figure 3, ref. 300.
[41] *See id., e.g.,* at page 6, lines 9-13, page 15, lines 12-13 and 17-19.
[42] *See id., e.g.,* at page 6, lines 13-18 and page 16, lines 5-17.

observing by a user said selected characteristics and the virtual dissection.[43]

Dependent claim 21 recites the following:

The method of claim 17, wherein said selected characteristic for enhancement comprises fluid data.[44]

Dependent claim 22 recites the following:

The method of claim 17, wherein said selected characteristic for enhancement comprises contrast enhanced fecal matter data.[45]

Independent claim 24 recites the following:

A computer readable medium encoded with a computer executable program for displaying a set of data on a virtually dissected anatomical structure,[46] said computer executable program comprising:

creating a virtual dissection[47] of the anatomical structure by mapping a first set[48] of data of the anatomical structure to a second set[49] of data of the anatomical structure;[50]

computing a plurality of display index values corresponding to object shapes[51] in said

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[43] *See id., e.g.,* at page 6, lines 13-18 and page 16, lines 5-17.
[44] *See id., e.g.,* at page 6, lines 2-4 and 14, page 13, line 22 to page 14, line 9 and page 15, line 11 to page 16, line 17.

[45] *See id., e.g.,* at page 6, lines 2-4 and 15-16, page 13, lines 14-17, page 15, line 11 to page 16, line 17.
[46] *See id., e.g.,* at page 5, lines 2-3.
[47] *See id., e.g.,* at page 11, line 20 to page 12, line 6, page 17, lines 4-6 and Figure 3, ref. 300.
[48] *See id, e.g.,* at page 9, lines 4-7 and Figure 1, ref. 103.
[49] *See id., e.g.,* at page 9, lines 4-7 and Figure 1, ref. 107.
[50] *See id., e.g.,* at page 5, lines 3-6 page 9, lines 16-17 and page 11, line 4 to page 12, line 6.
[51] *See id., e.g.,* at page 13, lines 12-21.

first set of data;[52]

assigning display attributes to said display index values;[53]

distance mapping from a reference axis said display index values from the first set of data to a third set[54] of data;[55]

organizing said third set of data for display with the virtually dissected anatomical structure.[56]

Dependent claim 27 recites the following:

The computer executable program of claim 24, further comprising highlighting select said display index values according to user input.[57]

Dependent claim 29 recites the following:

The computer executable program of claim 27, wherein said highlighted select said display index values are fluid data.[58]

Dependent claim 30 recites the following:

The computer executable program of claim 27, wherein said highlighted select said display index values are contrast enhanced fecal matter data.[59]

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[52] *See id., e.g.,* at page 5, lines 7-8.
[53] *See id., e.g.,* at page 5, line 8 and page 13, line 22 to page 14, line 9.
[54] *See id., e.g.,* at page 9, lines 4-7 and Figure 1, ref. 109.
[55] *See id., e.g.,* at page 5, lines 8-9 page 9, line 23 to page 10, line 2 and page 14, lines 10-21.
[56] *See id., e.g.,* at page 5, lines 9-12 page 10, lines 3-7 and page 14, line 22 to page 15, line 10.
[57] *See id., e.g.,* at page 6, lines 2-18 and page 15, lines 11-16.
[58] *See id., e.g.,* at page 6, lines 2-4 and 14, page 13, line 22 to page 14, line 9 and page 15, line 11 to page 16, line 17.
[59] *See id., e.g.,* at page 6, lines 2-4 and 15-16, page 13, lines 14-17, page 15, line 11 to page 16, line 17.

GROUNDS OF REJECTION TO BE REVIEWED ON APPEAL (37 C.F.R. § 41.37(c)(1)(vi))

- Claims 1-16 and 24-31 stand rejected under 35 U.S.C. 103(a) as being unpatentable over "Automated Polyp Detector for CT Colonography: Feasibility Study," Radiology 2000, 216, pp. 284-290 ("Summers") in view of "Nonlinear Virtual Colon Unfolding," IEEE, pp 411-418, Oct. 2001 ("Bartroli") and U.S. 2004/0013290 ("Krishnan"). .
- Claims 17-23 stand rejected under 35 U.S.C. 103(a) as being unpatentable over Summers in view of Bartroli.

ARGUMENT (37 C.F.R. § 41.37(c)(1)(vii))

I. The Office Action Has Not Established That The Proposed Combination Of Summers, Bartroli And Krishnan Renders Claims 1-16 And 24-31 Unpatentable

Claim 1 recites, in part, "distance mapping from a reference axis said display index values from the first set of data to a third set of data." Independent claims 9 and 24 recite similar limitations.

The Office Action relies on Summers as disclosing the limitations noted above. *See* April 15, 2008 Office Action at page 5. In particular, the Office Action states that the "3D color encoded polyp image as shown in Fig. 3b is surface unfolded to produce the 2D visual display as shown in Fig. 1b." *See id.*

However, **Summers does not describe, teach or suggest that anything from the image in Figure 3b is mapped to anything in Figure 1b**. Figure 3 of Summer represents an "anteroposterior view of the three-dimensional surface rendering of the colon bearing 10 simulated polyps... [and] a shape analysis of the colon with color encoding." *See* Summers at page 286, column 3.

Figure 1b of Summers, on the other hand, is a view showing the method of polyp detection in **a simplified fashion for the sake of clarity**. *See id.* at column 1. Summers in no way discloses that Figure 1b is any type of reconfiguration of the images in Figure 3. There simply is no mention in Summers that Figure 3 is mapped to or from Figure 1b. That is, Summers clearly does not describe, teach or suggest that any portion of Figure 3 (or data from the images of Figures 3) is mapped onto Figure 1 (or data of the hypothetical images of Figure 1), or vice versa. Indeed, as specifically stated in its description, **Figure 1 of Summers merely is a hypothetical representation of a portion of a colon that is used to clearly and simply show the method of polyp detection**. However, Figure 1 of Summers is not related to the actual three dimensional surface rendered images shown in Figure 3. In particular, Summers states the following:

> **Figure 1.** ***Illustration of shape-based colonic polyp detection.*** **(a)** ***In a hypothetical portion of the colonic surface,*** there are two polyps (arrows), one on a fold (small arrow) and the other between two folds (larger arrow). **(b)** After the polyp-detection algorithm is applied, the surface is color coded to indicate regions of different shapes.

Id. at page 285 (emphasis added).

As Summers clearly points out, the images shown in Figures 1a and 1b are of a **hypothetical** colon portion. Indeed, the Advisory Action even acknowledges that "Figure 1 is a **hypothetical** portion of the colonic surface...." *See* May 23, 2008 Advisory Action at page 2 (emphasis added). Because Figure 1 is "hypothetical," it is not an actual image or related to an actual image (*i.e.,* it is not mapped to or from an actual image). Instead, it is a mere hypothesis, or conjecture. Figures 1a and 1b of Summers are merely being shown to clearly and simply illustrate the method of polyp detection. *See id.* at pages 286 column 1 ("The principle behind the method is shown in Figure 1."). However, the images of the **hypothetical** colon portion are **not** mapped from or to the actual "anteroposterior three-dimensional surface-rendered images of colon" of Figure 3. Particularly, nothing shown in Figure 3 of Summers is mapped to Figure 1 of Summers (or vice versa), nor does Summers describe, teach or suggest as much. Indeed, there is absolutely nothing in Summers that directly links the hypothetical colonic surface portion images of Figure 1 with the actual images shown in Figure 3. Thus, the Applicants respectfully submit that Summers does not describe, teach or suggest that the "color encoded polyp image as shown in Fig. 3b is surface unfolded to produce the 2D visual display as shown in Fig. 1b" (as asserted in the Office Action). Instead, Figure 1 of Summers merely shows a simplified image to illustrate the "principle behind" the method of polyp detection "using software with a prototypic automated polyp detector that identifies regions of the colon wall with abnormal shape." *See* Summers at page 286, column 1. As such, Summers, in general, and Figures 1b and 3 of Summers, in particular, do not describe, teach or suggest "distance mapping from a reference

axis said display index values from the first set of data to a third set of data," as recited in claims 1, 9 and 24.

The Advisory Action acknowledges that "Summers doesn't specifically disclose that figure 1b is an unfolded version of figure 3b," but then summarily concludes that "there is motivation to lead one of ordinary skill in the art at the time of the invention to distinguish that figures 1b is indeed an unfolded version of figure 13b using the teachings of Bartroli's Figure 1 which visually is the exact type of display as of Summers' figures 1b and 3b." *See* Advisory Action at page 2. However, the Office Action merely cites to Figure 1 of **Bartroli** to support this conclusion. Figure 1 of Bartroli shows an "[o]utside view of virtual unfolding of a segment of a CT data of a healthy colon with a resolution of 198X115x300." *See* Bartroli at Figure 1. This Figure of Bartroli in no way relates to a hypothetical image, in general, or a hypothetical image used for the sake of clarity and simplicity, as shown in Figure 1b of Summers. Further, even if one were to assume that Figure 1b of Summers is an unfolded version of Figure 3b, which the Applicants clearly do not, the Office Action still has not shown where any of the cited references describe, teach or suggest "**distance mapping from a reference axis said display index values from the first set of data to a third set of data,**" as recited in claims 1, 9, 24 and the claims that depend therefrom. Thus, for at least these reasons, the Applicants respectfully request that the rejections of claims 1, 9, 24 and the claims that depend therefrom be reversed. Indeed, the Applicants respectfully submit that a *prima facie* case of obviousness has not been established with respect to these claims.

II. The Office Action Has Not Established That The Proposed Combination Of Summers, And Bartroli Renders Claims 17-23 Unpatentable

The Applicants next turn to the rejection of claims 17-23 as being rendered unpatentable by Summers in view of Bartroli. The Office Action states the following: "see Figs. 3b and 1b, the 3D color encoded polyp image as shown in Fig. 3b is surface unfolded to produce the 2d visual display as shown in Fig. 1b...." *See* April 15, 2008 Office Action at page 9.

As detailed above, however, Summers does not describe, teach or suggest that anything in Figure 3 is used to produce the hypothetical image of Figure 1b, or vice versa. Thus, for at least the reasons discussed above, the Applicants respectfully request reconsideration of the rejection of claims 17-23, as the Office Action has not established a *prima facie* case of obviousness.

III. The Office Action Has Not Established A *Prima Facie* Case Of Obviousness With Respect To Claims 4, 12 And 27

Claim 4 recites, in part, "highlighting select said display index values **according to user input**." Claims 12 and 27 recite similar limitations. The Office Action cites Summers at Figures 3c and 4c as disclosing these limitations. *See* April 15, 2008 Office Action at pages 7 and 8. However, these Figures of Summers show "[o]nly parts of the colon that meet both the primary and restrictive **shape criteria**," *See* Summers at Figures 3c and 4c. Indeed, Summers discloses a "shape-based algorithm...." *See id.* at page 289, column 1 (first column under "Discussion"). However, the Office Action has not shown where any of the references describes, teaches or suggests "highlighting select said display index values **according to user input**," as recited in claims 4, 12 and 27. Thus, for at least this additional reason, the Office Action has not established a *prima facie* case of obviousness with respect to these claims.

IV. The Office Action Has Not Established A *Prima Facie* Case Of Obviousness With Respect To Claims 6, 14, 21 And 29

Claim 6 depends from claim 4 and recites "wherein said **highlighted** [according to user input] select said display index values are **fluid data**." Claims 14 and 29 recite similar limitations, while claim 21 recites "wherein said [user] selected characteristic for enhancement comprises **fluid data**." The Office Action acknowledges that Summers "doesn't specifically disclose that the false-positives which are also highlighted in Fig. 3b are fluid data...." *See* April 15, 2008 Office Action at page 8. In order to overcome this deficiency, the Office Action relies on "Challenges for Computer-Aided Diagnosis for CT Colonography" ("*Challenges*"). *See id.*

Challenges "describe[s] 10 challenges that [the author] believe[s] must be addressed in a successful CTC CAD system." *See Challenges* at page 269, 2nd column 4th paragraph. Thus, *Challenges* does not describe, teach or suggest a functioning system, but rather the challenges that such a system must address.

Further, *Challenges* states that "[i]t **may be possible** to 'subtract' residual fluid or stool from CTC images or mark them so that they can be recognized [12, 13]." *See id.* at page 271, 2nd column (emphasis added). Note, however, that *Challenges* does not state that it **is** possible for this to happen. Moreover, *Challenges* does not enable such a system. Instead, it merely states "it may be possible." In order for a reference to provide an enabling disclosure, it must "describe[] the claimed invention in sufficient detail to enable a person of ordinary skill in the art to carry out the claimed invention...." *See* MPEP at 2121(III). In particular, the disclosure "must provide an enabling disclosure of the desired subject matter; mere naming or description of the subject

matter is insufficient...." *See* MPEP at 2121.01. Clearly, the Office Action has not shown that any of the cited references describe "wherein said **highlighted** [according to user input] select said display index values are **fluid data**" in sufficient detail to enable a person of ordinary skill in the art to carry out such an invention. Instead, the reference that the Office Action relies on, namely *Challenges*, merely indicates that "[i]t **may be possible** to 'subtract' residual fluid or stool from CTC images or mark them so that they can be recognized [12, 13]." *See id.* at page 271, 2nd column (emphasis added). Thus, for at least this reason, the Applicants respectfully request that the rejection of claims 6, 14, 21 and 29 be reversed.

Even if the references did enable "subtracting residual fluid or stool from CTC images to mark them so that they can be recognized," as conjectured by *Challenges*, the Office Action has not shown that the references describe, teach or suggest "wherein said **highlighted** [according to user input] select said display index values are **fluid data,**" as recited in claim 4, for example. Thus, for at least this reason, the Applicants respectfully request that the rejection of claims 6, 14, 21 and 29 be reversed.

V. The Office Action Has Not Established A *Prima Facie* Case Of Obviousness With Respect To Claims 7, 15, 22 And 30

Claim 7 depends from claim 4 and recites "wherein said **highlighted** [according to user input] select said display index values are **contrast enhanced fecal matter data**." Claims 15 and 30 recite similar limitations, while claim 22 recites "wherein said [user] selected characteristic for enhancement comprises **contrast enhanced fecal matter data**." The Office Action acknowledges that Summers "doesn't specifically disclose that the false-positives which

are also highlighted in Fig. 3b are ... contrast enhanced fecal matter data...." *See* April 15, 2008 Office Action at page 8. In order to overcome this deficiency, the Office Action again relies on *Challenges*. *See id.*

As noted above, *Challenges* "describe[s] 10 challenges that [the author] believe[s] must be addressed in a successful CTC CAD system." *See Challenges* at page 269, 2nd column 4th paragraph. Thus, *Challenges* does not describe, teach or suggest a functioning system, but rather the challenges that such a system must address.

Further, *Challenges* states that "[i]t **may be possible** to 'subtract' residual fluid or stool from CTC images or mark them so that they can be recognized [12, 13]." *See id.* at page 271, 2nd column (emphasis added). Note, however, that *Challenges* does not state that it **is** possible for this to happen. Moreover, *Challenges* does not enable such a system. Instead, it merely states "it may be possible." In order for a reference to provide an enabling disclosure, it must "describe[] the claimed invention in sufficient detail to enable a person of ordinary skill in the art to carry out the claimed invention...." *See* MPEP at 2121(III). In particular, the disclosure "must provide an enabling disclosure of the desired subject matter; mere naming or description of the subject matter is insufficient...." *See* MPEP at 2121.01. Clearly, the Office Action has not shown that any of the cited references describe "wherein said **highlighted** [according to user input] select said display index values are **contrast enhanced fecal matter data**" in sufficient detail to enable a person of ordinary skill in the art to carry out such an invention. Instead, the reference that the Office Action relies on, namely *Challenges*, merely indicates that "[i]t **may be possible** to 'subtract' residual fluid or stool from CTC images or mark them so that they can be recognized

[12, 13]." *See id.* at page 271, 2nd column (emphasis added). Thus, for at least this reason, the Applicants respectfully request that the rejection of claims 7, 15, 22 and 30 be reversed.

Even if the references did enable "subtracting residual fluid or stool from CTC images to mark them so that they can be recognized," as conjectured by *Challenges*, the Office Action has not shown that the references describe, teach or suggest "wherein said **highlighted** [according to user input] select said display index values are **contrast enhanced fecal matter data,**" as recited in claim 5, for example. Thus, for at least this reason, the Applicants respectfully request that the rejection of claims 7, 15, 22 and 30 be reversed.

VI. CONCLUSION

For at least the reasons discussed above, the Applicants respectfully submit that the pending claims are allowable in all respects. Therefore, the Board is respectfully requested to reverse the rejections of pending claims 1-31.

PAYMENT OF FEES

The Commissioner is authorized to charge any necessary fees, including the $510 fee for this Appeal Brief, or credit overpayment to Deposit Account 07-0845.

Respectfully submitted,

Dated: August 28, 2008

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CLAIMS APPENDIX

(37 C.F.R. § 41.37(c)(1)(viii))

1. A method for displaying a set of data with a virtually dissected anatomical structure, said method comprising:

creating a virtual dissection of the anatomical structure by mapping a first set of data of the anatomical structure to a second set of data of the anatomical structure;

computing a plurality of display index values corresponding to object shapes in said first set of data;

assigning display attributes to said display index values;

distance mapping from a reference axis said display index values from the first set of data to a third set of data; and

organizing said third set of data for display with the virtually dissected anatomical structure.

2. The method of claim 1, wherein the anatomical structure is a colon.

3. The method of claim 1, wherein the display attribute is color.

4. The method of claim 1, further comprising highlighting select said display index values according to user input.

5. The method of claim 4, wherein said highlighted select said display index values are shape data.

6. The method of claim 4, wherein said highlighted select said display index values are fluid data.

7. The method of claim 4, wherein said highlighted select said display index values are contrast enhanced fecal matter data.

8. The method of claim 1, wherein said first set of data is three-dimensional and said second and third sets of data are two-dimensional.

9. A system for displaying a set of data with a virtually dissected anatomical structure, said system comprising:

a virtual dissection unit for creating a virtual dissection of the anatomical structure by mapping a first set of data to a second set of data, wherein the second set of data corresponds to the virtual dissection;

a computation unit for computing display index values corresponding to object shapes in said first set of data;

an assignment unit for assigning display attributes to said display index values;

a mapping unit for distance mapping from a reference axis said display index values from the first set of data to a third set of data;

an overlay unit for organizing said third set of data for display with the virtually dissected anatomical structure.

10. The system of claim 9, wherein the anatomical structure is the colon.

11. The system of claim 9, wherein the display attribute is color.

12. The system of claim 9, further comprising a highlighting unit for highlighting select said display index values according to user input.

13. The system of claim 12, wherein said highlighted select said display index values are shape data.

14. The system of claim 12, wherein said highlighted select display index values are fluid data.

15. The system of claim 12, wherein said highlighted select display index values are contrast enhanced fecal matter data.

16. The system of claim 9, wherein said first set of data is three-dimensional and said second and third sets of data are two-dimensional.

17. A method for viewing a virtually dissected anatomical structure, said method comprising:

instructing by a user the display of a virtual dissection of an anatomical structure;

selecting by a user various characteristics of the anatomical structure for enhancement; and,

observing by a user said selected characteristics and the virtual dissection.

18. The method of claim 17 further comprising displaying said virtual dissection and said select characteristics.

19. The method of claim 17, wherein said anatomical structure is a colon.

20. The method of claim 19, wherein said colon has characteristics comprising cup, rut, saddle, ridge, and cap.

21. The method of claim 17, wherein said selected characteristic for enhancement comprises fluid data.

22. The method of claim 17, wherein said selected characteristic for enhancement comprises contrast enhanced fecal matter data.

23. The method of claim 17, wherein said selected characteristic for enhancement comprises shape data.

24. A computer readable medium encoded with a computer executable program for displaying a set of data on a virtually dissected anatomical structure, said computer executable program comprising:

creating a virtual dissection of the anatomical structure by mapping a first set of data of the anatomical structure to a second set of data of the anatomical structure;

computing a plurality of display index values corresponding to object shapes in said first set of data;

assigning display attributes to said display index values;

distance mapping from a reference axis said display index values from the first set of data to a third set of data;

organizing said third set of data for display with the virtually dissected anatomical structure.

25. The computer executable program of claim 24, wherein the anatomical structure is a colon.

26. The computer executable program of claim 24, wherein the display attribute is color.

27. The computer executable program of claim 24, further comprising highlighting select said display index values according to user input.

28. The computer executable program of claim 27, wherein said highlighted select said display index values are shape data.

29. The computer executable program of claim 27, wherein said highlighted select said display index values are fluid data.

30. The computer executable program of claim 27, wherein said highlighted select

said display index values are contrast enhanced fecal matter data.

31. The computer executable program of claim 24, wherein said first set of data is three-dimensional and said second and third sets of data are two-dimensional.

EVIDENCE APPENDIX
(37 C.F.R. § 41.37(c)(1)(ix))

(1) U.S. 2004/0013290 ("Krishnan"), entered into record by Examiner in February 12, 2007 Office Action.

(2) Bartroli, "Nonlinear Virtual Colon Unfolding," IEEE Proceedings, Visualization, pp. 411-418, entered into record by Applicants in January 12, 2004 Information Disclosure Statement.

(3) Summers, "Automated Polyp Detector for CT Colonography: Feasibility Study," pp 284-290, entered into record by Examiner in November 20, 2007 Office Action.

(4) Summers, "Challenges for Computer-Aided Diagnosis for CT Colonography," pp. 268-274, entered into record by Examiner in November 20, 2007 Office Action.

RELATED PROCEEDINGS APPENDIX
(37 C.F.R. § 41.37(c)(1)(x))

Not applicable.